

### **IN THE ABSTRACT**

Please amend the abstract as follow:

A thulium-doped fiber amplifier is disclosed and includes a thulium-doped fiber to amplify optical signals belonging to S-band, a first pumping unit to output amplified spontaneous emission that represents a peak value in a predetermined wavelength range belonging to C-band, to pump the thulium-doped fiber, and a second pumping unit to output pumping light belonging to the ~~C-band and a different wavelength band~~ different from the C-band to pump the thulium-doped fiber.